

WHAT IS CLAIMED IS:

1. A method for producing a liquid crystal display device comprising the steps of:

sealing a liquid crystal containing a polymerizable component capable of being polymerized with heat or light between a pair of substrates having been disposed as being opposed to each other; and

polymerizing the polymerizable component by irradiating the liquid crystal with light of a prescribed luminance at a prescribed temperature for a prescribed irradiating time under application of a prescribed voltage, so as to control a pretilt angle and a tilt direction of liquid crystal molecules,

wherein at least one of the voltage, the temperature, the luminance and the irradiation time is controlled as a parameter to obtain prescribed optical characteristics.

2. A method for producing a liquid crystal display device as claimed in claim 1, wherein the voltage is controlled within a range of 0.1 V to 100 V.

3. A method for producing a liquid crystal display device as claimed in claim 1, wherein the temperature is controlled within a range of -30°C to 250°C.

4. A method for producing a liquid crystal display device as claimed in claim 1, wherein the luminance is controlled within a range of 1 mW/cm<sup>2</sup> to 10,000 mW/cm<sup>2</sup>.

5. A method for producing a liquid crystal display device as claimed in claim 1, wherein the radiation time is controlled within a range of 1 msec to 24 hours.

6. A method for producing a liquid crystal display device comprising the steps of:

sealing a liquid crystal containing a polymerizable component capable of being polymerized with heat or light in a first concentration, a polymerization initiator in a second concentration and a polymerization inhibitor in a third concentration, respectively, between a pair of substrates having been disposed as being opposed to each other; and

polymerizing the polymerizable component so as to control a pretilt angle and a tilt direction of liquid crystal molecules,

wherein at least one of the first to third concentrations is controlled as a parameter, whereby obtains desired optical characteristics.

7. A method for producing a liquid crystal display device as claimed in claim 6, wherein the first concentration is controlled within a range of 0.001% to 10% by weight.

8. A method for producing a liquid crystal display device as claimed in claim 6, wherein the second concentration is controlled within a range of 0.0001% to 10% by weight.

9 A method for producing a liquid crystal display device as claimed in claim 1, wherein the parameter is controlled under feedback of a thickness of a cell or a height of a pillar

spacer formed on one of the pair of substrates before and after injecting the liquid crystal.

10. A method for producing a liquid crystal display device as claimed in claim 1, wherein the parameter is controlled to compensate a luminance distribution within the panel.

11. A method for producing a liquid crystal display device as claimed in claim 1, wherein the optical characteristics include  $\gamma$  characteristics and a transmittance upon displaying black.

12. A method for producing a liquid crystal display device comprising the steps of:

sealing a liquid crystal containing a polymerizable component capable of being polymerized with heat or light between a pair of substrates having been disposed as being opposed to each other; and

polymerizing the polymerizable component under application of a prescribed voltage, so as to control a pretilt angle and a tilt direction of liquid crystal molecules,

wherein the voltage is varied in each color of a color filter layer.

13. A method for producing a liquid crystal display device comprising the steps of:

sealing a liquid crystal containing a polymerizable component capable of being polymerized with light between a pair of substrates having been disposed as being opposed to

each other; and

polymerizing the polymerizable component by irradiating the liquid crystal with light under application of a prescribed voltage, so as to control a pretilt angle and a tilt direction of liquid crystal molecules,

wherein the light is radiated by scanning a surface of the substrate using a linear light source.

14. A method for producing a liquid crystal display device comprising the steps of:

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between a pair of substrates to produce a liquid crystal panel;

measuring a value indicating optical characteristics of the liquid crystal panel; and

subjecting the polymerizable component to photopolymerization or thermal polymerization under application of a voltage so as to adjust at least one of the voltage, a light illuminance, a temperature, a light radiation time and a heating time based on the value thus measured.

15. A method for producing a liquid crystal display device comprising the steps of:

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between a pair of substrates to produce a liquid crystal panel;

measuring a value indicating optical characteristics of

the liquid crystal panel;

subjecting the polymerizable component to photopolymerization or thermal polymerization under application of a voltage; and

subjecting the liquid crystal panel after polymerization to additional light irradiation or additional heat application based on the value thus measured.

16. A method for producing a liquid crystal display device comprising the steps of:

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between a pair of substrates to produce a liquid crystal panel;

subjecting the polymerizable component to photopolymerization or thermal polymerization under application of a voltage; and

measuring a value indicating optical characteristics of the liquid crystal panel after polymerization to evaluate the polymerization having been completed in a desired state.

17. A method for producing a liquid crystal display device comprising the steps of:

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between a pair of substrates to produce a liquid crystal panel;

subjecting the polymerizable component to photopolymerization or thermal polymerization under

application of a voltage; and  
measuring a value indicating optical characteristics of  
the liquid crystal panel during polymerization.

18. A method for producing a liquid crystal display device comprising the steps of:

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between a pair of substrates to produce a liquid crystal panel;

removing electrostatic charge of the liquid crystal panel; and

subjecting the polymerizable component to photopolymerization or thermal polymerization under application of a voltage.

19. A method for producing a liquid crystal display device comprising the steps of:

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between a pair of substrates to produce a liquid crystal panel;

irradiating the liquid crystal panel with light having a longer wavelength than that on polymerization; and

subjecting the polymerizable component to photopolymerization or thermal polymerization under application of a voltage.

20. A method for producing a liquid crystal display

device comprising the steps of:

subjecting a substrate or a pair of substrate attached to each other to irradiation of light or application heat;

holding a liquid crystal composition containing a photopolymerizable component, a thermally polymerizable component or a photothermally polymerizable component between the pair of substrates to produce a liquid crystal panel; and

subjecting the polymerizable component to photopolymerization or thermal polymerization under application of a voltage.